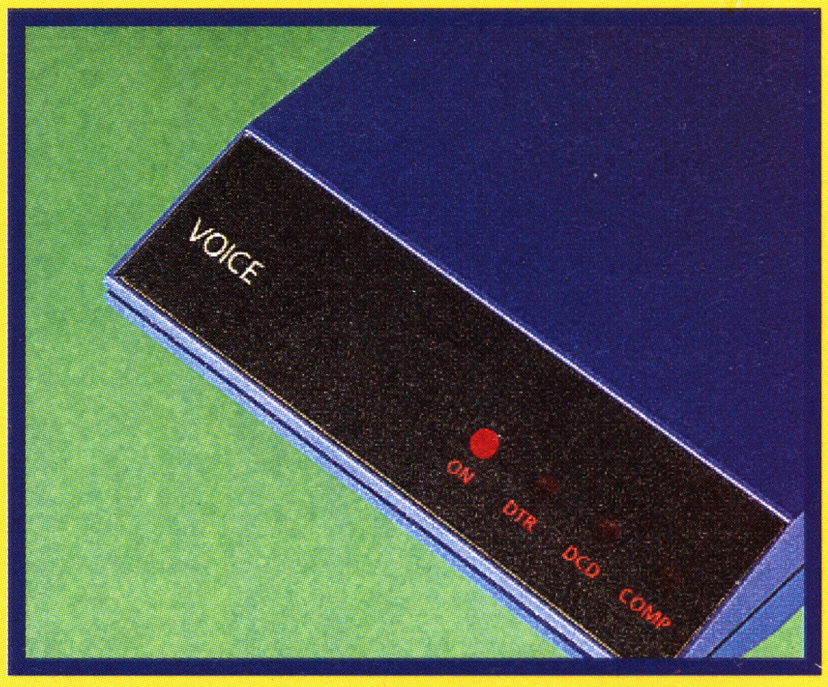
Beginners' KnowHow

2 GETTING STARTED: YOUR PC



Inside...

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Welcome

Discover how much more a personal computer can do for you, whether you're an absolute beginner or a regular user.

PC KnowHow is the essential guide to everything you need to know about computing for the home, the small office and the family. PCs are no longer a luxury. With a PC you can do everyday things with more flair and ease. You can write letters, look after your accounts and keep track of names and addresses. You can find information easily, show pictures and play sounds and movies.

The Internet lets you search the world's computers for information on any topic you can think of, from football to fashion — and that's all for little more than the cost of a local phone call. You can also get in touch with other computer users worldwide and exchange information.

Don't be scared

Many people still see PCs as complicated and frightening. Yet anyone who has seen kids using one at school will know this can't be true. Once you've broken through the barriers of jargon that surround PCs, you'll find they are no more difficult to work than a fax machine or a video recorder. And they can do a whole lot more for you.

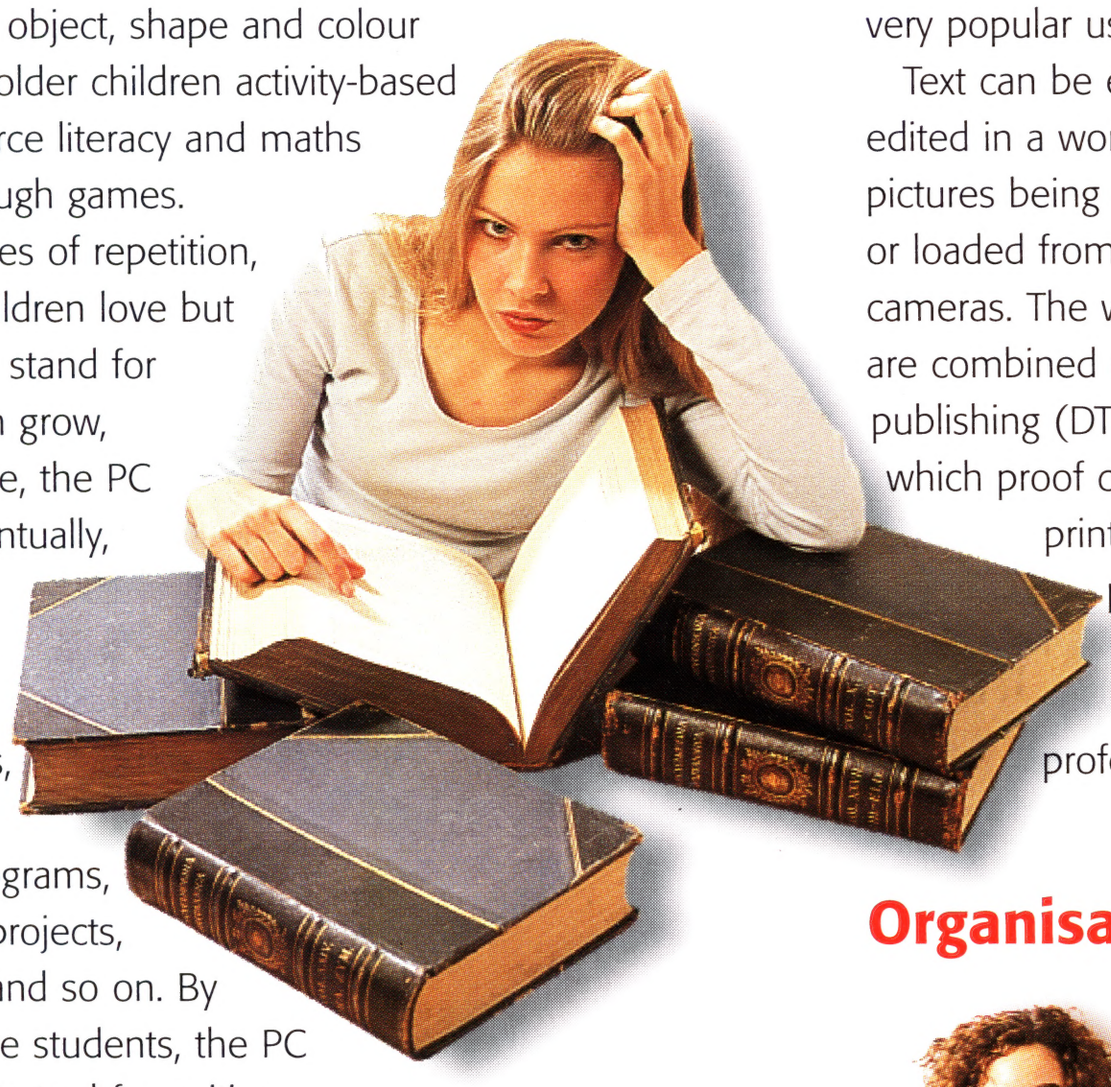
You and your PC

Further your education, publish newsletters, send email, organise your life and much, much more.

Education

PCs are great for kids. For infants, there are programs that develop skills in object, shape and colour recognition; for older children activity-based programs reinforce literacy and maths skills, often through games.

A PC never tires of repetition, which young children love but few parents can stand for long. As children grow, demanding more, the PC gives more. Eventually, kids will want grown-up software like word processors, drawing and spreadsheet programs, for homework, projects, maps, pictures and so on. By the time they are students, the PC will be their main tool for writing, research and communication.



Email

Electronic mail, or email, is an increasingly popular way of communicating with other computer users. With an email address you can send messages to any other email address in the world for the cost of a local telephone call.

You need an Internet connection (see Internet) but other costs are minimal. A big advantage of email is that you don't have to be in to receive it and you don't have to have your PC switched on, as for faxes. Your email is stored by your Internet provider until you dial up and transfer it to your own computer.

Another variant of email is the newsgroup, an Internet service where people leave messages on electronic noticeboards. There are over 30,000 newsgroups, organised around areas of interest such as dogs, cars, gardening and so on. Anyone can join a newsgroup and read the messages. If you see something that sparks your imagination, you just join in.

Desktop publishing

With a computer and a printer you can be author, editor, publisher, printer and distributor of your own newspaper, magazine or book. Most authors and publishers leave printing and distribution to professionals, but writing, editing and publishing are very popular uses for computers.

Text can be entered and edited in a word processor, with pictures being created on the PC or loaded from still or video cameras. The words and pictures are combined using a desktop publishing (DTP) program from which proof copies can be printed. The final publication can be stored on a disk and given to a professional printer.

Organisation

A computer can help put your life in order — a good job, because buying a computer means much more information to monitor. You've not only got postal addresses and contacts to enter, but also email addresses, Web sites and fax numbers.

Storing contact information on a computer makes sense. You can print labels, make calls and send email by calling up the details without having to retype them and without making transcription errors. Other ways of organising yourself include appointments calendars that tell you when meetings are due, prioritised lists that update themselves daily, and on-screen reminders of birthdays and anniversaries.

If your diary is stuffed with scraps of paper you never copy up, switching to a computer could be what you need to sort it out. Then your computer can keep it that way.

Beginners' KnowHow

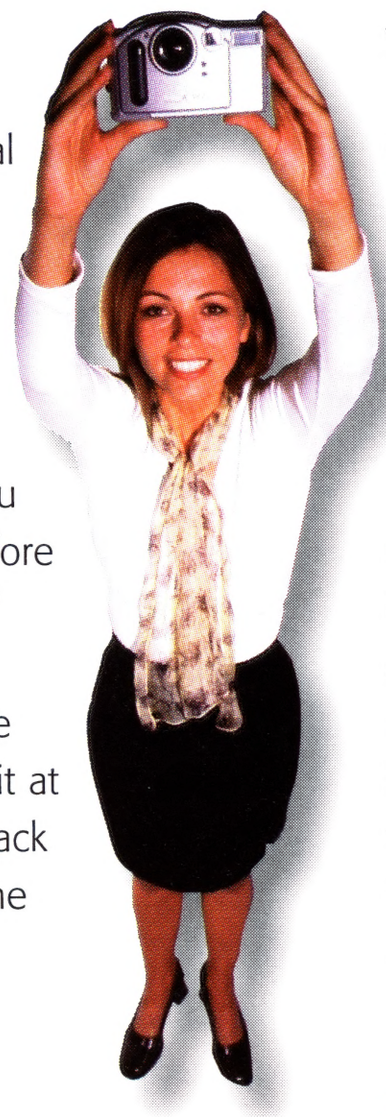
More from your PC

Create and edit pictures, write music, surf the Internet and send faxes and email with your PC.

Digital photography

The new trend in home photography is digital imaging; with a PC, it's now possible to edit and print professional quality photos

All you need is a colour inkjet and some glossy photo paper. The photos can come from a conventional camera — any film processor can transfer them to a CD — or you can take new ones with a digital camera. Before making prints you can improve the quality of originals, add special effects and new backgrounds, or remove unwanted faces. The best part of digital processing is that you do it at your PC, in comfort and without having to black out your windows or lock the family out of the bathroom.

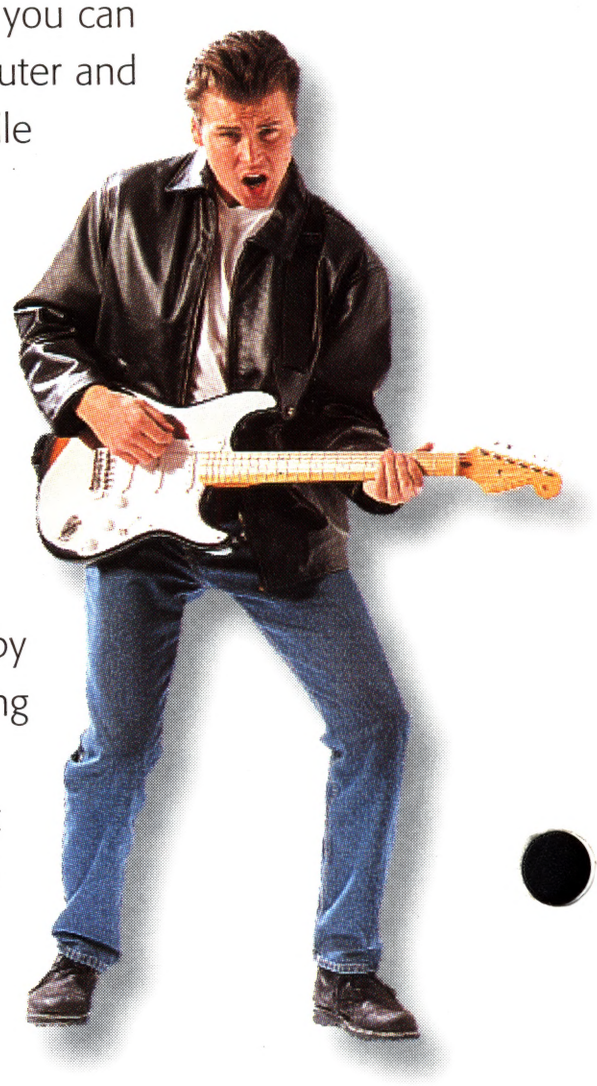


Making music

Whatever your musical loves, a computer can help you pursue them. Did you know that you can slot an audio CD into your computer and listen to your favourite music while you work?

If you want to make your own music you can create it on a PC (or on a digital musical instrument) then edit, mix and play it back. You can also record voices and acoustic instruments through a microphone.

Why not immortalise yourself by recording your own CD and selling it on the Net? Of course, if you can't play a musical instrument it may seem unlikely, but a PC can help too. There are programs to teach you how to play musical instruments and how to read and write music.



Internet

Connecting to the Internet is easier than you think. You pay a small monthly connection fee but you don't need any technical skill. Once you're online everything is free. The thousands of computers that make up the Net's global network are linked: by dialling just one of them for the cost of a local call, you can use all the others.

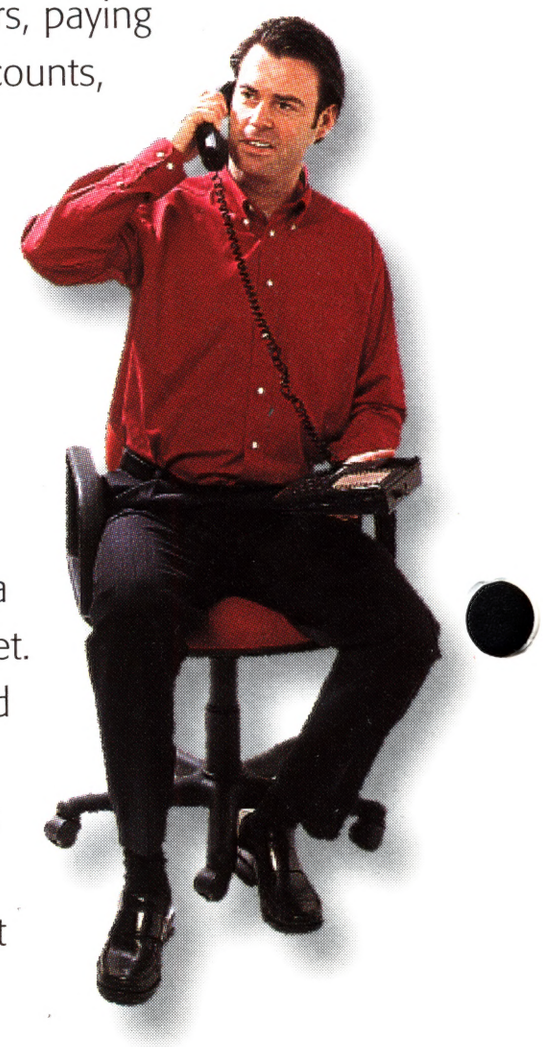
The most popular part of the Internet is the World Wide Web, where organisations and individuals put information they want to share with the world.

Those codes you may have seen on posters, in newspapers or at the end of TV ads — with dot this, dot that and co.uk in them — all tell you where to find pages on the Web.

You might go Web surfing too. This is like TV channel hopping. You go where your fancy takes you, following leads as topics catch your eye.

Keep on running

Many people run societies and organisations from home, using computers to monitor subscriptions and publish newsletters. Since PCs can function as photocopiers, answering machines and as a way of sending and receiving electronic mail, or email; and since they make the administrative chores of writing letters, paying bills, sending letters and keeping accounts, easier, as well as attracting new members by promoting the organisation on the World Wide Web, it's hard to see how a computer could fail to be useful.



Computer fax

You can receive and send faxes on a PC. Just plug it into any phone socket. The faxes you receive can be viewed on screen or printed out.

You can't send paper faxes unless you've got an accessory called a scanner, but you can send faxes that you've typed into your PC.

Game playing

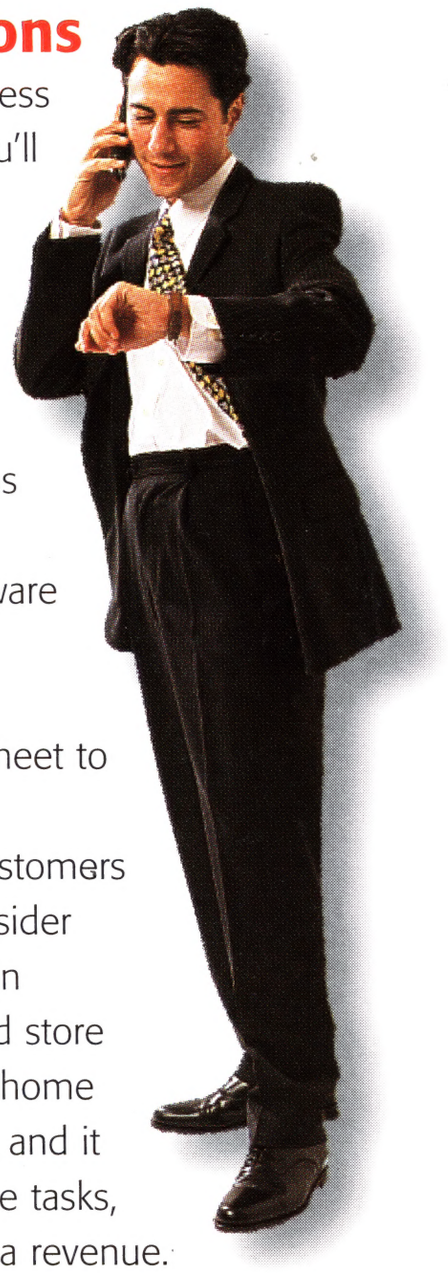
Games may not be your main reason for buying a computer but today's PCs are as good as or better than dedicated games machines. The big advantage they have is the wider choice of games, and although new titles are expensive, they're affordable a few months later when they are repackaged on budget labels.

The current trend is for 3D games. Players control characters moving through realistic screen worlds, usually killing everyone on the way. Multi-player versions, where two people on separate computers compete, are also popular.

Other games include sports simulations; adventure and arcade games; screen versions of traditional board or card games; and even serious games to hone your decision-making skills.

Business applications

Running a home office or business is easy with a computer and you'll be as well equipped as any organisation. A PC provides the same facilities as expensive fax, answering and copying machines, with the added bonus of email and other means of electronic communication.

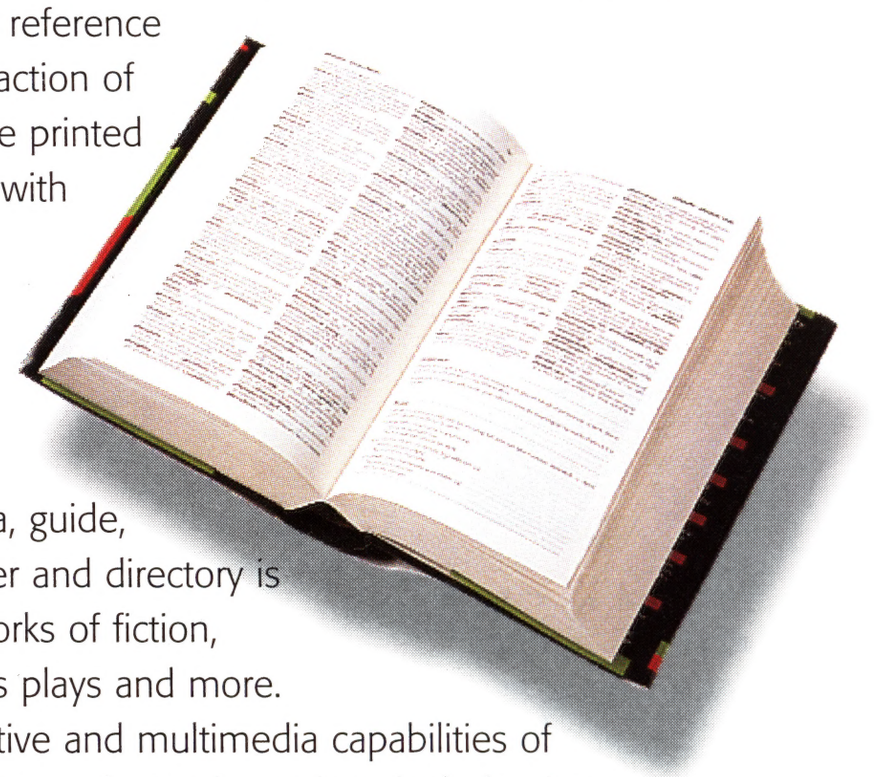


A typical set of business software includes a word processor to produce professional looking business documents, a spreadsheet to track cashflow and an accounts program. If you have a lot of customers or suppliers you might also consider setting up a database so you can dispense with filing cabinets and store transactions on disk. Running a home office on a PC is more efficient, and it speeds up tedious administrative tasks, giving you time to generate extra revenue.

Reference

Computers make great research tools. There's a wealth of online information on a subscription basis, plus much that is freely accessible on the World Wide Web.

The storage capacity of CD-ROMs — one disc can store 1,000 books — also makes it possible for ordinary people to own major reference works for a fraction of the cost of the printed volumes and with no need for miles of shelving.

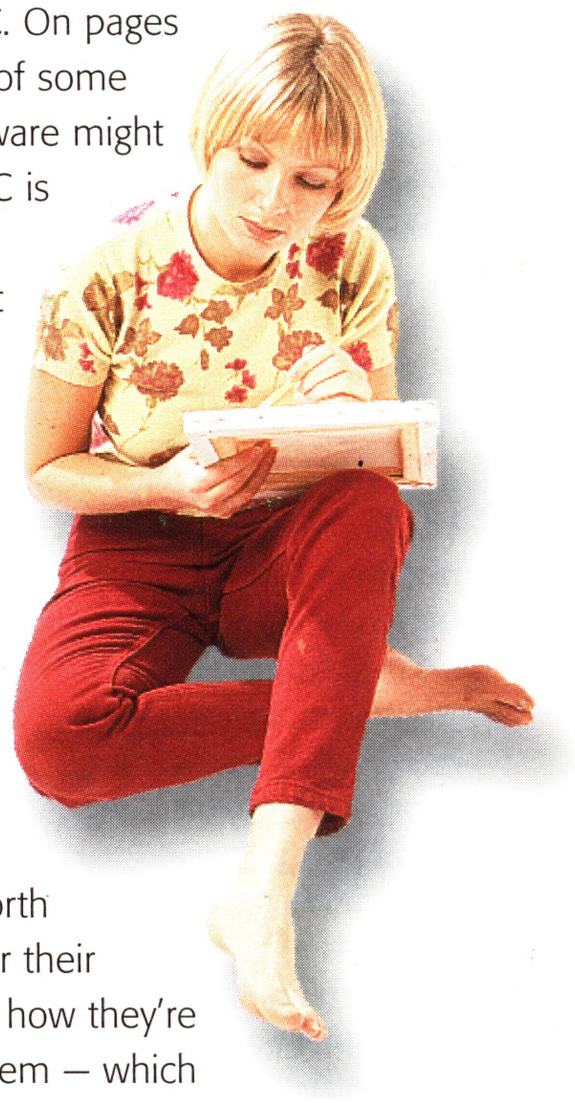


Every dictionary, encyclopaedia, guide, atlas, gazetteer and directory is there, plus works of fiction, Shakespeare's plays and more.

The interactive and multimedia capabilities of today's PCs mean electronic versions include pictures, sounds and explanations that are beyond printed works, and all can be searched without turning to an index.

And what's more...

The hints on these pages are a fraction of what can be done with a PC. On pages 14 and 15 the descriptions of some of the popular types of software might inspire you. Remember, a PC is a tool. Games apart, it's seldom used just for fun but as a means of working more effectively.



A PC has terrific artistic potential, manipulating words and ideas or creating visual images. You might also choose to use a PC for video-conferencing, or for cheap international phone calls via the Internet. A final thought is that it's worth learning about computers for their own sake — how they work, how they're programmed, how to use them — which would be a useful addition to a CV.

How it works

Take a quick look at all the bits and pieces that make up a computer system.

A PC has a lot in common with a video recorder, not least because both have features that are rarely used. More significant is that VCRs and PCs both depend on software to function. Without it they would be useless.

VCR software is stored on cassettes. PC software comes on CD-ROMs. These look like audio CDs but contain games, encyclopaedias, accounts programs, word processors and so on. There are other parallels too. Both display their software on a screen — a TV or a monitor — and both have a controller. A computer keyboard looks different from a remote control, but both devices send commands to the main system.

Where a PC is different is that its processor — its brain — is not pre-programmed for the specific tasks of recording and playing tapes. It's adaptable. It can calculate taxes, answer the phone or check your spelling. A PC is like a bright child, always ready to learn.

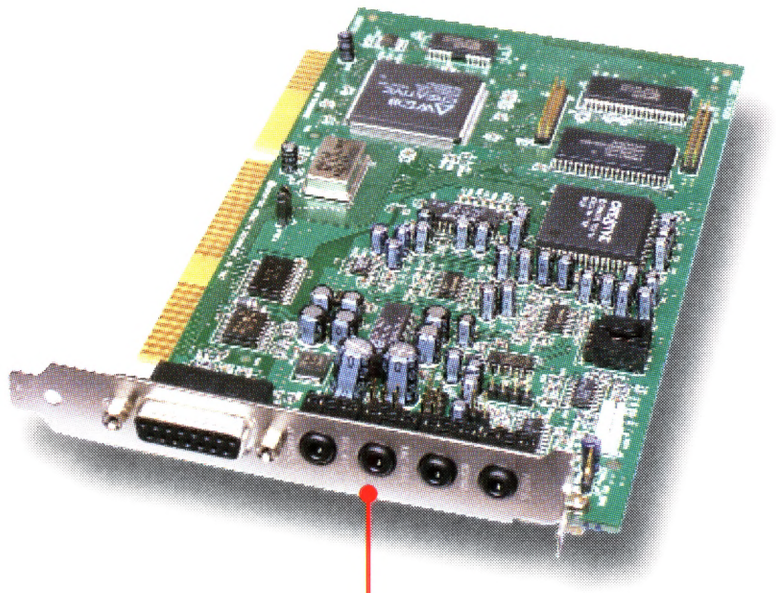
You don't need to know about engines to drive a car, and you don't need to know how a PC works to use it effectively. You do need to be familiar with its controls and accessories, all of which are described here.

The monitor displays what a PC is doing and it does so in millions of vivid colours. Screen sizes range from 14in, which is rather small, to 21in, which is excessively generous. Most are 15in or 17in. The larger models are not only expensive, they're too bulky for the average desk. Some monitors incorporate speakers and microphones and a small number have built-in cameras for video conferencing.

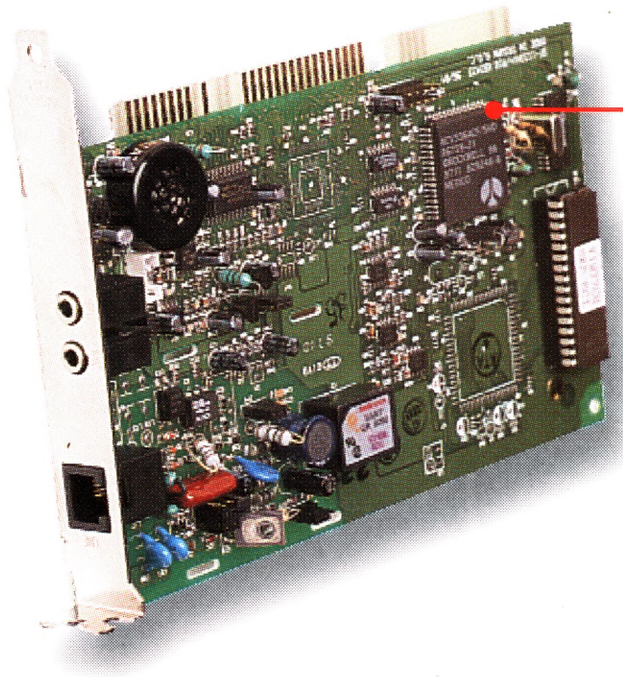
PC speakers come in all shapes and sizes. Some are internal, others external. They have to be able to generate all the sounds that a PC is capable of producing, including CD-quality stereo, speech, telephone messages and exploding space ships. The best way of judging speakers is to listen to them playing different kinds of sound at different levels of volume.

The standard computer keyboard uses the Qwerty layout, a name derived from the first six letters on the top row. A rectangular keyboard is suitable for learners but some may prefer a moulded keyboard that uses the same layout in a more ergonomic case. Non-Qwerty layouts, including Braille, are also available.

The mouse controls a pointer on the screen. As you move the mouse it moves the pointer accordingly: push it away from you and pointer moves to the top of screen; pull it towards you and the pointer moves down. You may also move it from side to side and in any direction in between. The buttons on the mouse determine whether the pointer on the screen is used to draw objects or to select and move them.

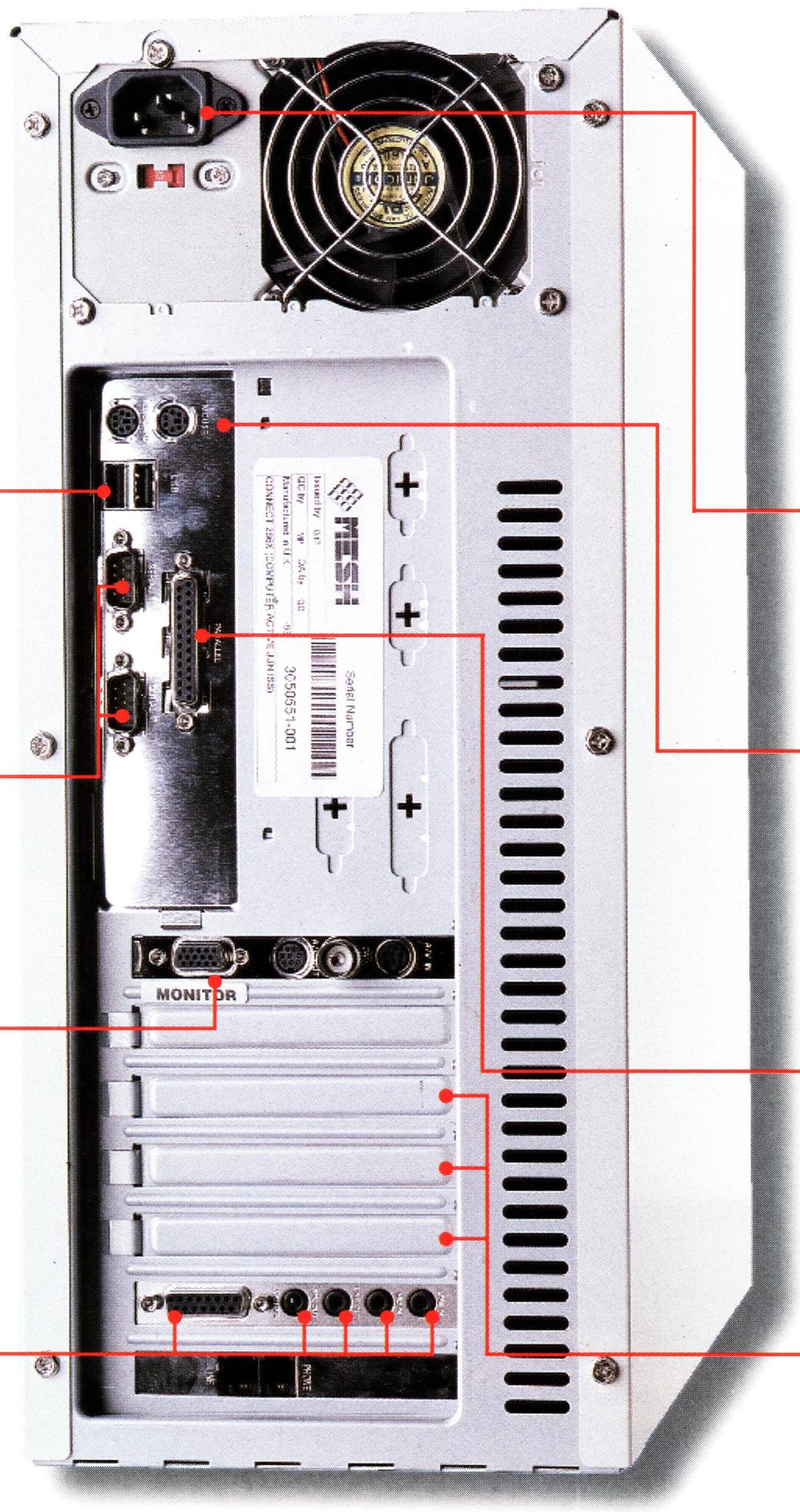


The **soundcard**, which processes sound and music, plugs into a socket inside the PC but, for obvious reasons, its connectors are on the back panel. The small jack plugs are for speakers, microphone and line connections to other equipment. The larger socket accepts either a joystick or a MIDI instrument.



An **internal modem** is a device that turns computer signals into a form that can be sent down an ordinary telephone line. It must have a socket for a phone cable and may also have jacks for a telephone handset, microphone and speaker. External modems are also available.

Joysticks are for playing games. The buttons can be programmed in different ways according to the game being played, and may be used to fire guns, launch missiles or operate the brakes of a car.



USB ports are a recent innovation. They can be used like parallel and serial ports but really come into their own when used with more complicated equipment, such as scanners and digital video cameras, where a lot of information has to be transferred very quickly.

Serial ports are for connecting mice, external modems and some types of printer. You can also connect two PCs by a cable between their serial ports.

The **monitor port** connects your PC to a monitor so you can see what it is doing.

If you plan to play games with your PC you will need to connect a joystick to the **joystick port** which is usually connected to a soundcard. The soundcard will also have sockets for external speakers and a microphone

Your computer's **power lead** and the socket it plugs into are identical to the lead you use to power a kettle or other domestic appliances.

This PC has two almost identical **PS2 ports**. One is for a keyboard and the other for a mouse. Not all PCs have these ports, in which case there'll be a DIN socket for the keyboard and the mouse has to be plugged into a serial port.

The **parallel port** was originally designed for printers, but other devices can be connected at the same time as a printer using a piggy-back arrangement called a pass-through adapter.

Your computer should incorporate several **expansion slots** for devices such as an internal modem or a soundcard (see above).

Inside your PC

Lift the lid off your computer and you should find that it is not as complicated as you thought.

It may look complicated, but the inside of a PC is fairly straightforward. Since it's a modular design, most parts of a PC are easy to change and its usually just a question of unplugging one component and slotting in another.

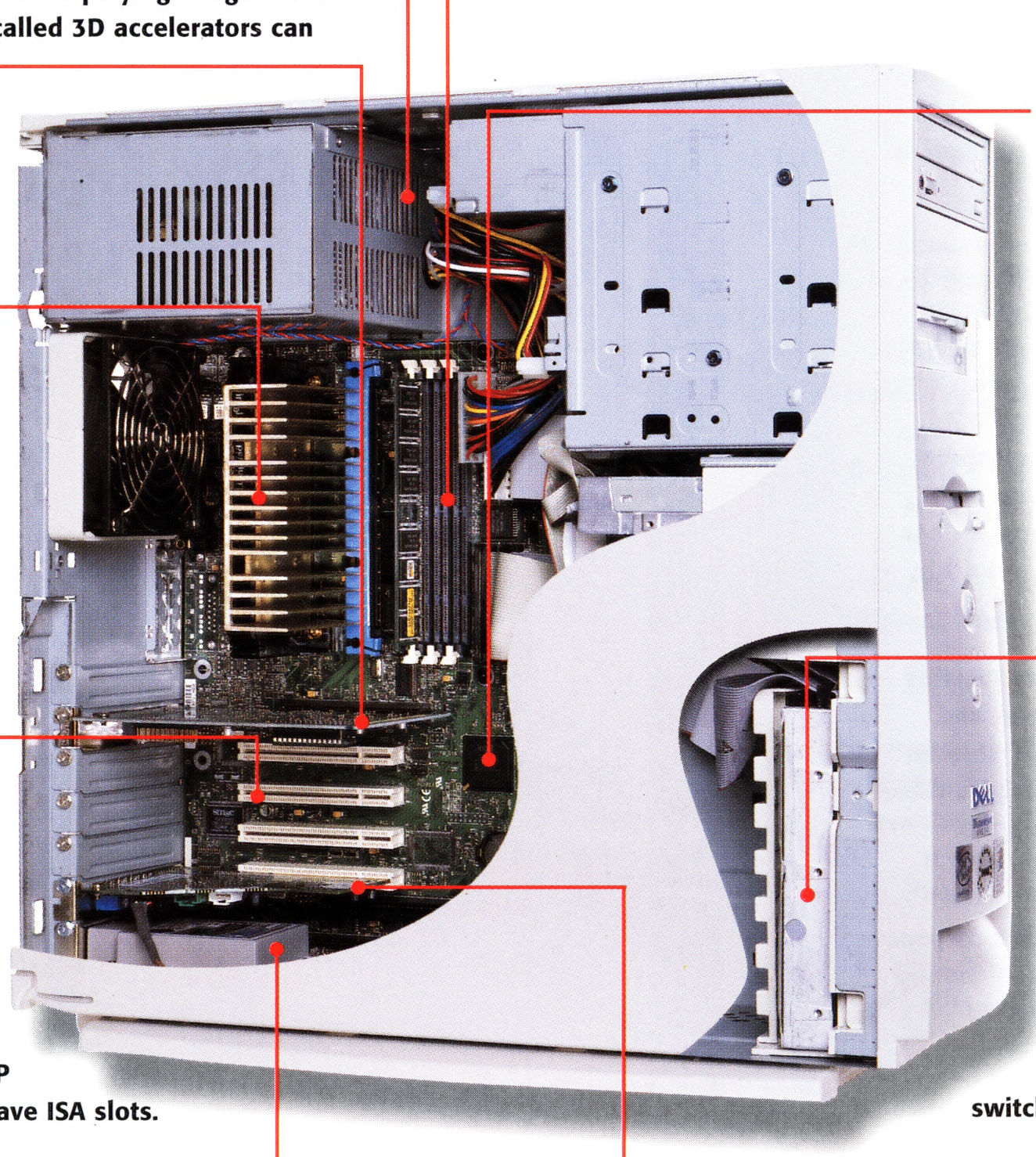
Computers generally come in two types of case: desktops and mini-towers. Although there are some slight internal differences, a mini-tower case is essentially no more than a desktop case turned on its side. There is usually more room inside a mini-tower case too. Removing a computer's case is often simply a matter of unscrewing a few screws or bolts and sliding off the cover. Just make sure that the computer is turned off when you do it and take care not to snag any loose wires.

The power supply is a transformer that converts the 240V mains supply into as voltage that the PC can use. The red and yellow cables supply power to all parts of the system.

The graphics card is responsible for displaying images on the monitor. Special graphics cards called 3D accelerators can speed up sophisticated three-dimensional graphics, making games look better and play more smoothly.

Sometimes called the CPU, the processor is the brain of any PC. The faster and more powerful it is, the faster and more powerful the PC. Most PCs have processors made by Intel, but there are other types made by companies such as AMD and Cyrix.

Expansion slots are narrow plastic slots with electrical connectors that let you add expansion cards to a PC. Some expansion cards are essential like the graphics cards, while others are useful extras like a modem. Most new PCs have several PCI expansion slots and a single AGP slot. Some older PCs may also have ISA slots.



Random Access Memory (RAM) is a PC's short-term memory. When a PC is switched on, it stores parts of the operating system, running applications and any work you are doing. The more RAM a PC has, the faster it will be. RAM loses its contents when a PC is switched off.

The chips on a PC's motherboard are called the chipset. These control some of the most important parts of a PC and allow the processor to communicate with the other components.

The hard disk provides long-term storage for software and your work. It looks like a metal box but inside are several magnetic disks rotating at very high speeds. Hard disks store data even when a PC is switched off unlike RAM.

A modem lets a computer communicate with another computer over the telephone line, for such things as accessing the Internet and sending email. Most modern PCs come with an internal modem (on an expansion card) but external modems are also available.

A soundcard is essential if you want your PC to make noises. Some soundcards are built onto the motherboard, some fit into an expansion slot but all convert computer data into sound that you hear through your speakers.

Portables

Notebook computers offer all the functions of desktop computers in a portable case.

A notebook computer — older terms like laptop are rarely used any more — can do pretty much anything a desktop computer can do, but in a smaller package. The small size of notebook computers means they don't use many off-the-shelf components and this makes them more expensive than desktop PCs of a similar specification. Choosing the notebook that's right for you is even more essential since you can't change the screen, keyboard or pointing device if you don't like them.

Notebook PCs come in all shapes and sizes, from tiny sub-notebooks to briefcase size models with huge screens. All run Windows, however, and all run the same set of applications as a desktop PC. If the licence permits it, you can even install your desktop applications on a notebook, to prevent buying two copies of everything.

One of the most important features of a notebook is its keyboard. Some keyboards are near full-size while others are compressed with small keys. Unlike a normal keyboard, there won't be a separate numeric keypad.

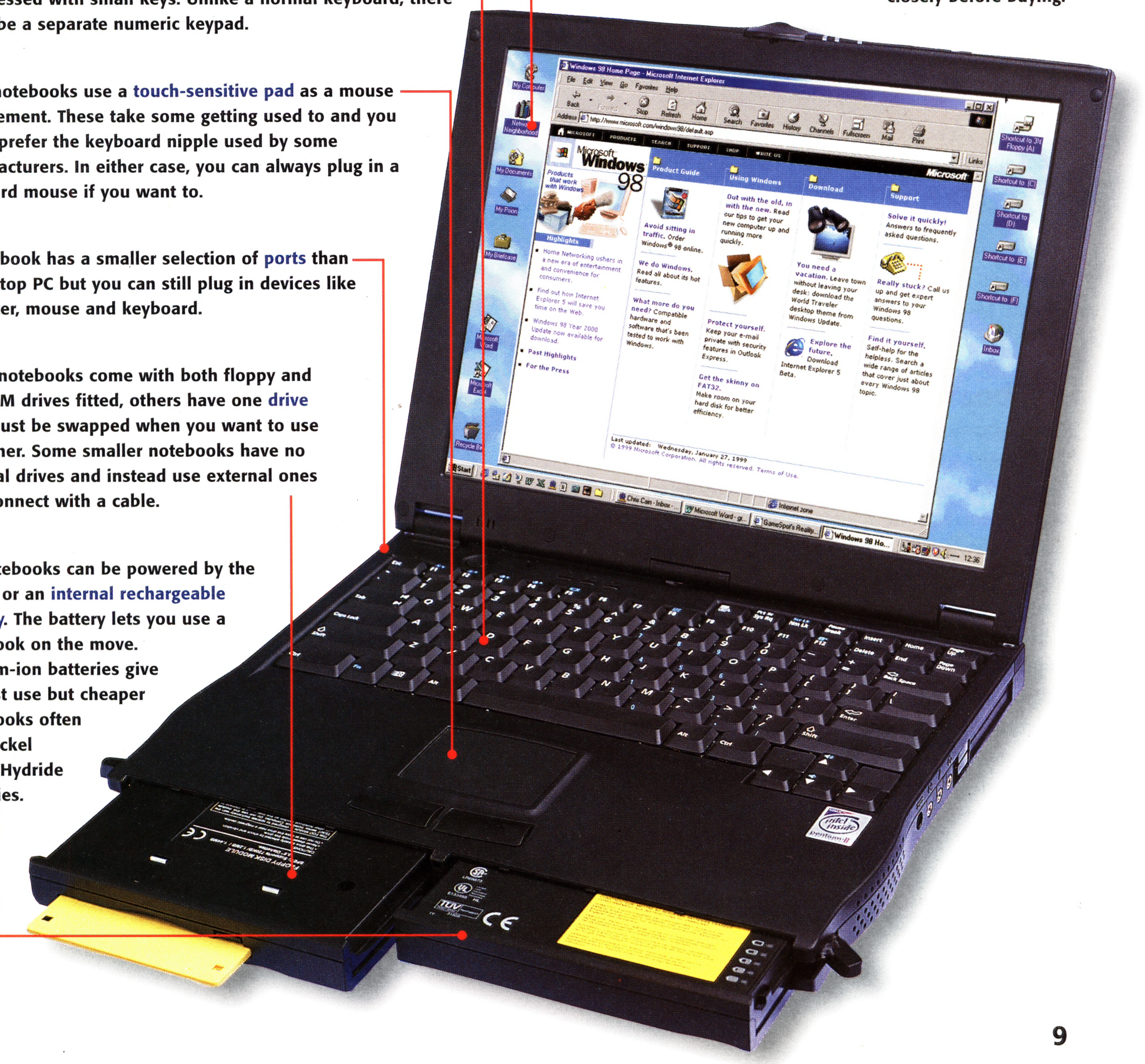
Most notebooks use a touch-sensitive pad as a mouse replacement. These take some getting used to and you might prefer the keyboard nipple used by some manufacturers. In either case, you can always plug in a standard mouse if you want to.

A notebook has a smaller selection of ports than a desktop PC but you can still plug in devices like a printer, mouse and keyboard.

Some notebooks come with both floppy and CD-ROM drives fitted, others have one drive that must be swapped when you want to use the other. Some smaller notebooks have no internal drives and instead use external ones that connect with a cable.

All notebooks can be powered by the mains or an internal rechargeable battery. The battery lets you use a notebook on the move. Lithium-ion batteries give longest use but cheaper notebooks often use Nickel Metal Hydride batteries.

All notebooks have a flat-panel colour LCD screen. Screen quality varies hugely between notebooks, so always look at it closely before buying.



Input devices

Inputting is the process of typing, clicking, scanning, playing or copying information into your PC.

The computer term 'garbage in, garbage out' has passed into common use. What's interesting about the phrase is that it shows people understand that PCs work from information from human operators, and that if operators enter the wrong information (garbage) the computer will make mistakes and produce garbage.

Feeding a PC with instructions and information is called inputting. The devices most commonly used are keyboards and mice, the keyboard for inputting text and numbers and the mouse for selecting options displayed on the screen. It's easy to see how mistakes might be made by striking the wrong key or clicking the wrong option on the screen.

Fortunately there are alternative input devices that work more reliably with certain types of information. Imagine the problems you'd have if you had to input a photograph by describing the position of every colour, shape and dot. Yet scanners and digital cameras do this with total accuracy

Some input devices have restricted uses. A joystick is fine for a flight simulator but no good for word processing. A musical keyboard is useless for anything but music.

Keyboards

The keyboard is at the top of the hierarchy of input devices because it's the only one that can do everything. If your mouse breaks down, you can, with a little ingenuity, control your PC entirely from the keyboard.

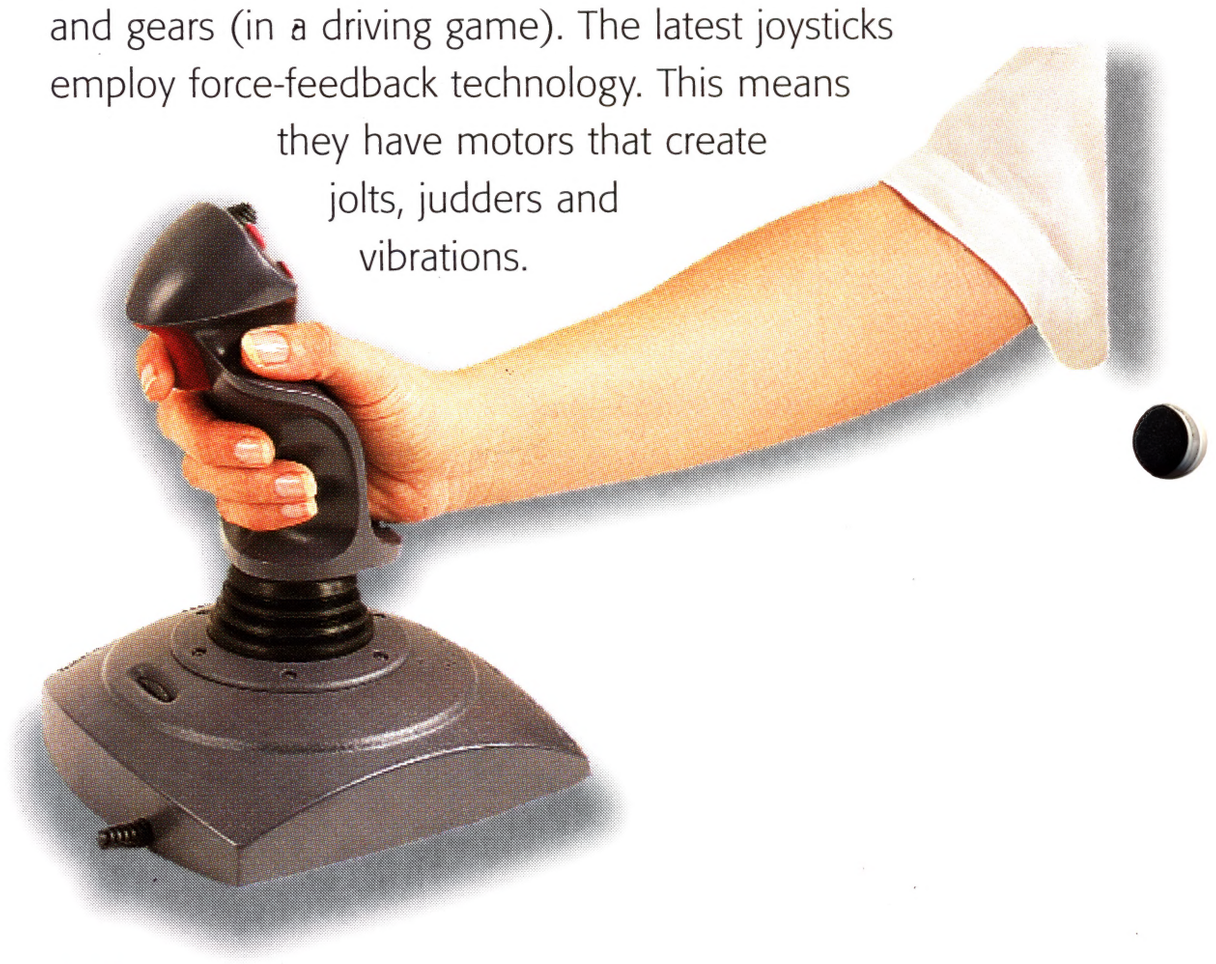
As well as a full set of alphabetic, numeric and calculator keys, a keyboard has the same control keys as a typewriter for tabbing, spacing and layout. In addition, there are keys related solely to computer operation, such as for moving the screen pointer, to jump to the beginning and end of documents, and to undo mistakes.

Variations on the standard keyboard include dirt and water-resistant versions; ergonomic keyboards to prevent the strains of repetitive typing; keyboards for small children and keyboards that transmit infrared signals instead of using cables.

Joysticks

It's unusual for joysticks to be provided with a PC because they have limited uses. Most games can be played without a joystick using key presses and mouse movements, but there are some games that cry out for a joystick, especially ones where you have to pilot an aircraft or spaceship.

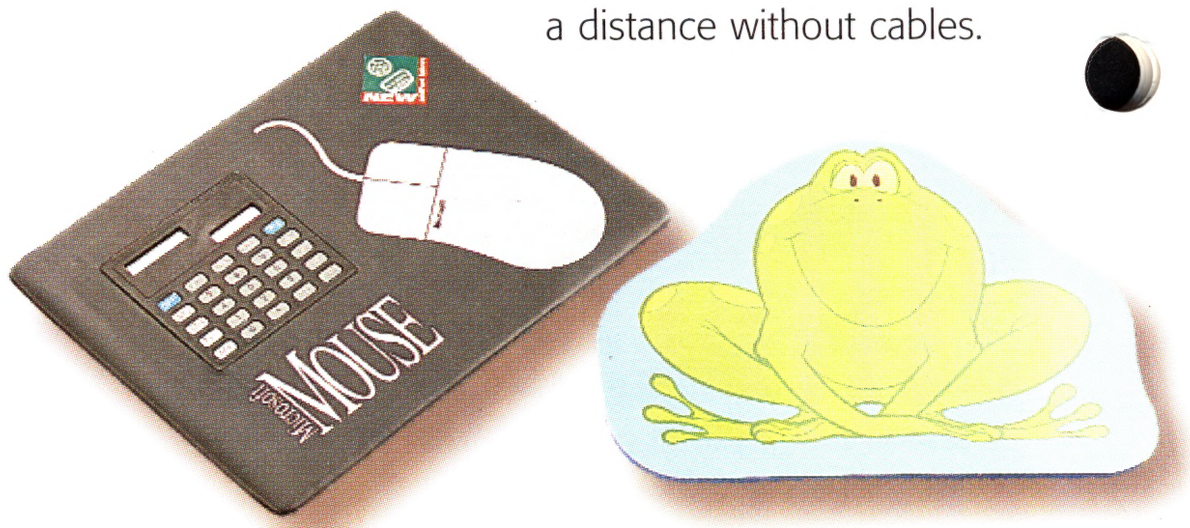
Joysticks are festooned with buttons whose function varies according to the game. They can control flaps, brakes and throttle (in a flight simulator); guns, rockets and missiles (in a space combat game); or brakes, accelerator and gears (in a driving game). The latest joysticks employ force-feedback technology. This means they have motors that create jolts, judders and vibrations.



Mice

A PC's mouse doesn't look much like its namesake, but the name has stuck. A mouse controls the movement of the pointer on the screen. When the pointer moves over a button or menu (a list of choices) you click a button on the mouse to make a selection. You can also draw with a mouse by holding down a button while moving it.

Most mice have two buttons and many have an extra wheel control. The wheel is useful for scrolling through long documents, the effect being like watching the credits at the end of a movie – but you can make them go backwards as well as forwards. There are radio-controlled and infrared mice that can be operated from a distance without cables.



Drawing tablets

Drawing tablets are used in conjunction with mice and keyboards to create artistic and technical drawings. There are two types, one operated by a pen and the other by a puck, which is best described as a flattened mouse. Drawing tablets are usually found in designers' or artists' studios.

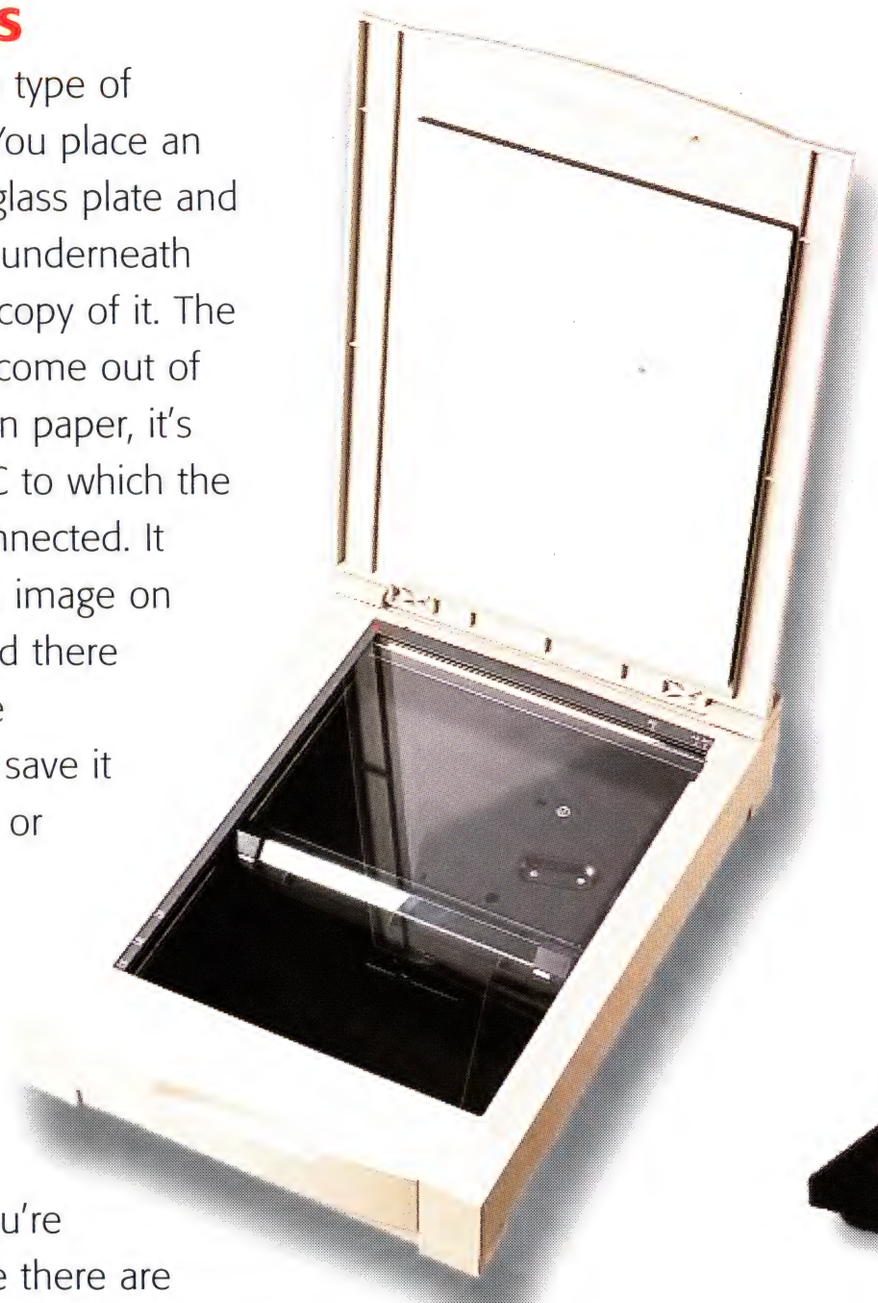
Pen-based tablets are for freehand drawing and artistic work and the puck-operated types are for technical drawing and computer-aided design (CAD). Pucks make it easy to create precise scale drawings and pen-based tablets are good with irregular shapes and flowing lines.

Digital cameras

Digital cameras break pictures down into coloured dots stored on memory chips. The dots are copied from the memory in the camera into the memory of a PC via a cable connection and the memory in the camera can then be cleared and used for a new set of pictures.

No film is used, so the cameras cost very little to run: just the cost of batteries or recharging a power pack. The disadvantage is that digital cameras are more expensive than film cameras and, although the quality is good enough for snaps and looks great on screen, it isn't as good as real film.

Scanners



A scanner is a type of photocopier. You place an original on a glass plate and a light shines underneath and makes a copy of it. The copy doesn't come out of the scanner on paper, it's sent to the PC to which the scanner is connected. It appears as an image on the screen and there you can make changes to it, save it for future use or print it out.

Scanners are cheap when you consider how useful they are. If you're short of space there are upright desktop scanners where paper is fed into a slot rather than placed on a sheet of glass. A third type of scanner, a hand-operated device you drag over the surface of a picture, is now virtually obsolete.

Sound and music

PCs produce music and effects by synthesising them from fragments of sound stored on chips. But how do you tell the PC which notes to play and which sounds to make?

As ever, the keyboard and mouse can be used, in this case to select notes from a virtual keyboard on the PC screen. Notes must be dragged into place and can be adjusted until the sound is right. A better option for a musician is to connect a real keyboard (or any other electronic instrument) to a PC and play the music live.

You can also get sounds into a computer by plugging in a microphone, by copying tracks from an audio CD in the CD-ROM drive, or by connecting any type of playback device to the Line In socket on the back of the computer.

Output devices

Display your hard work in all its glory, print it out for others to read or publish it on the Web.

They say that what goes in must come out, but this isn't true of PCs. What goes into a PC often sits there forgotten, until somebody deletes it. One reason is that not every PC is equipped to use every type of data, so while any PC can be used to store digital music, only those with soundcards and speakers can play it. To serve any useful purpose, a PC must have output devices. What would be the point of making labels on a PC if you couldn't print them, or of buying a game without a monitor to see it on?

The way most PCs are sold, the only output device you're sure to get is a monitor. You might get speakers but you hardly ever get a printer unless a vendor has put together a special package. It makes sense not to supply a complete set of output devices with a PC because needs vary. Keen games players don't need colour printers and don't want to pay for something they'll never use. The only snag with the system of buying output devices as accessories is that they're not covered by the same warranty and service arrangements as the rest of the PC.

Monitors

A monitor is nearly always supplied with a PC but this doesn't mean you have to take what you're given. Most vendors sell PCs with a rather basic monitor to keep the price down, but they're quite happy to sell you a better monitor and give you full credit for the one you don't want.

The screen size of a monitor is important, especially if you want to publish books or magazines, or produce scale plans and diagrams. In both cases, the more you can fit on the screen the better, but for the average user who wants to run a mix of different software types, a 15in or 17in screen is fine.

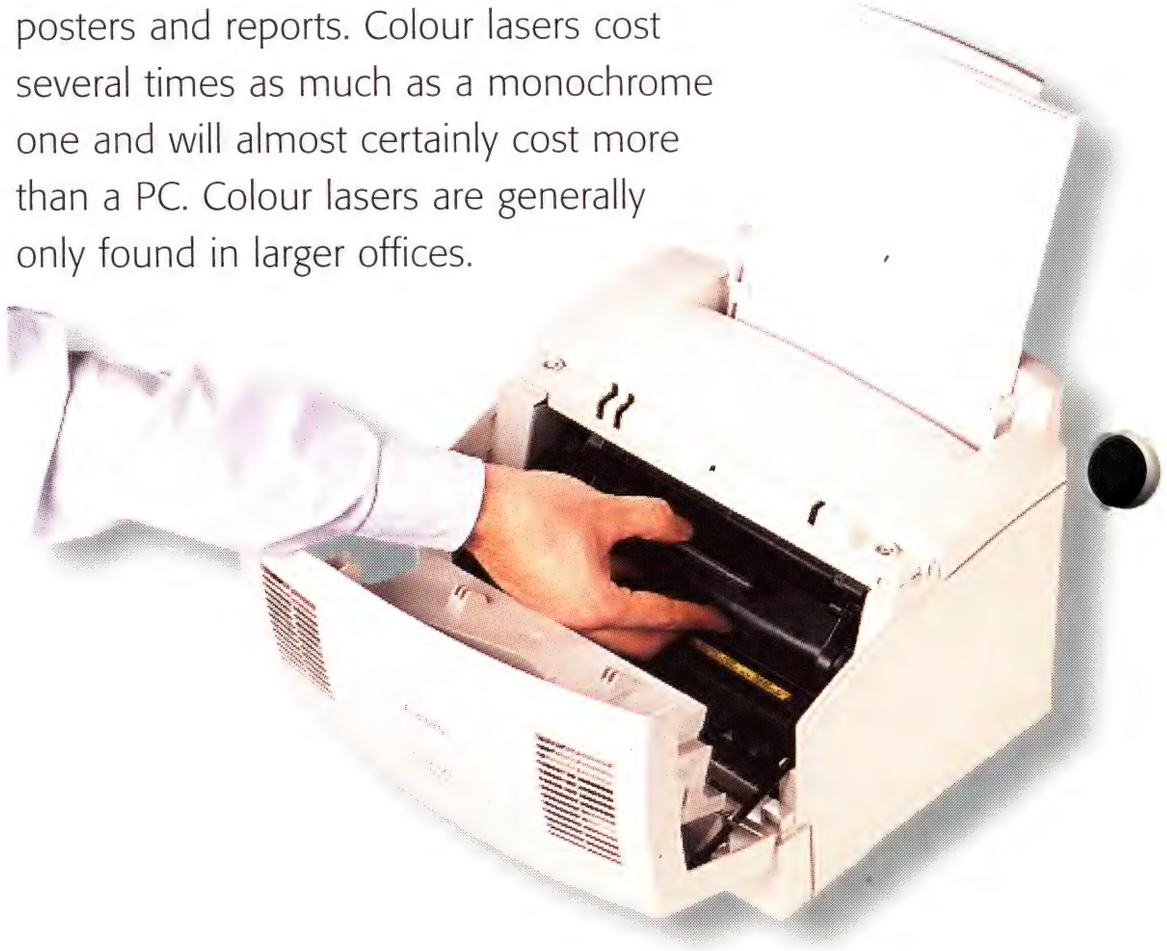
The controls on a monitor may be knobs, digital buttons or a combination of the two. On all but the cheapest monitors the controls are linked to an onscreen display that shows the settings. The mechanism used to tune the picture is irrelevant provided the image is bright, sharp and geometrically true.

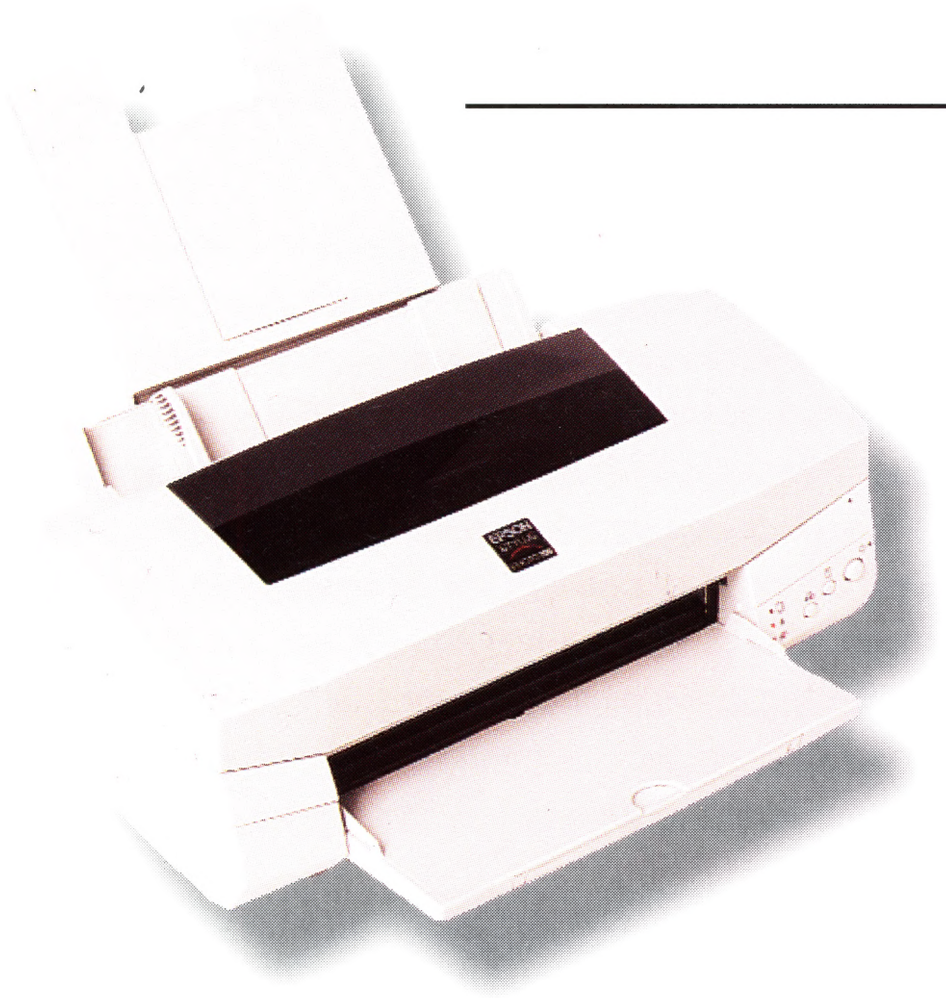
Speakers

The speakers that come with a new PC are often akin to the cardboard belt you get with a new pair of trousers: better than nothing but only just. Some PCs, especially those designed for home entertainment, are supplied with excellent speakers, but the more usual offering is a pair of hollow-sounding plastic boxes. Fitting new speakers is a simple matter of unplugging the old ones and plugging in new ones. Amplifiers are built into the speakers and don't need a separate connection. Multi-speaker systems are available, the most popular being a three-speaker system with a bass sub-woofer that you can hide under a desk and a couple of mini-speakers to go either side of the monitor.

Laser printers

Laser printers use a dry toner powder and can churn pages out at anything from four to 32 pages per minute. They're great for printing letters, but the affordable ones can't print in colour, which makes them unsuitable for working with photos and not very good for newsletters, posters and reports. Colour lasers cost several times as much as a monochrome one and will almost certainly cost more than a PC. Colour lasers are generally only found in larger offices.



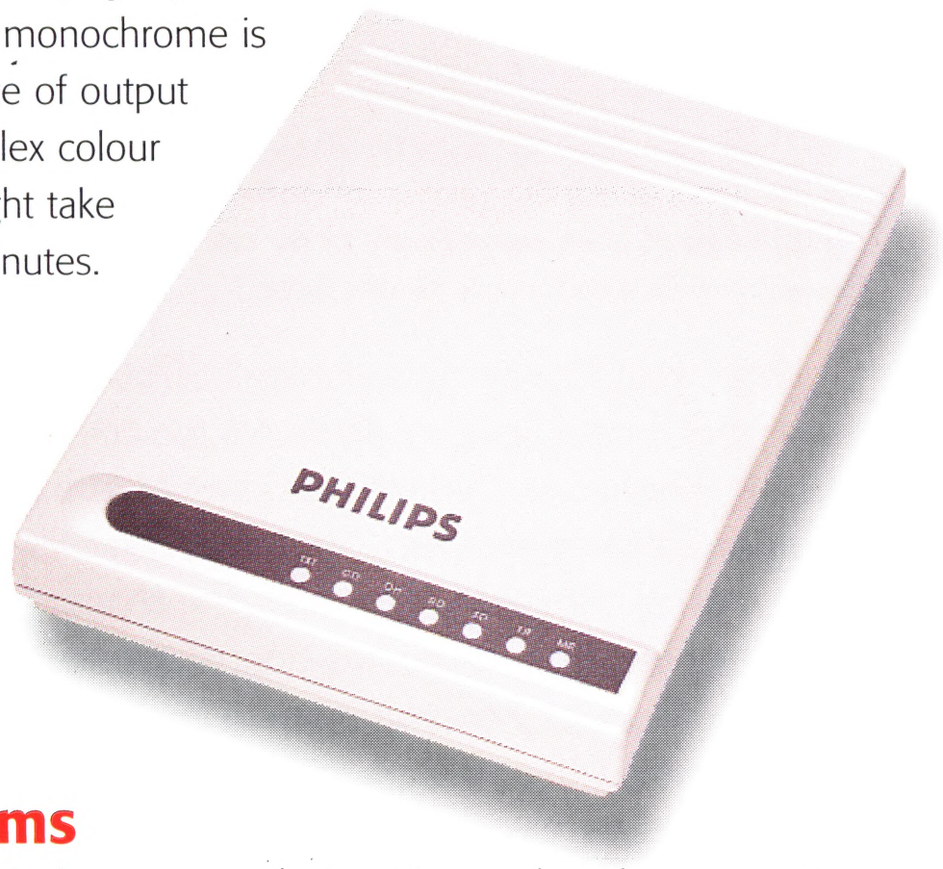


Inkjet printers

Inkjet printers are slow and expensive to run, but they have a lot going for them. They're cheap to buy and you can get a decent colour inkjet printer for less than you'd pay for a set of toner refills for a colour laser printer. Another plus is that inkjet printers are quiet in operation.

You refill them with cartridges of liquid ink and load them with ordinary copier paper. Other, more expensive, papers are available for photographic and presentation work. You can even print overhead transparencies and back-to-front pictures on a material that can be ironed on to T-shirts.

The fastest inkjet printers are equal to the slowest laser printers. Four pages per minute in monochrome is a good rate of output and complex colour pages might take several minutes.



Modems

A modem isn't an output device. It's a gadget that connects your computer to a phone line, and from there to other PCs, faxes and the Internet. The sort of information you'd want to output through a modem would be email messages, faxes and World Wide Web pages.

When you sign up with an Internet provider, you're allocated a certain amount of space on the provider's computers for you to present your own Web pages. Not many people bother to use their Web space unless they've got something to sell, but it isn't difficult to design a simple Web site on your own PC and then pipe the whole thing through your modem on to your provider's computer.

CD writers

If you've got any audio CDs you don't need telling that you can't record on them. Now the picture's changing because CD-Recordable and CD-Rewritable drives have arrived.

Recordable and Rewritable drives can record any type of data, such as music, pictures or words. Once a Recordable CD has been recorded, it can't be changed. CD-Rewritable discs are more expensive because they use a different recording technique that lets you erase items you no longer need and record new ones in their place. When used for music rather than computer data, CD-Recordable discs can be played back on ordinary audio CD players, but CD-Rewritable discs must be used on a PC.

Hard wired

One PC can send data to another PC if they're linked by a cable. Almost as useful is the fact that if two or more PCs are linked together, they can share a single printer connected to one of them.

Top software

Without software and your input a PC would simply sit on your desk with no idea what to do.

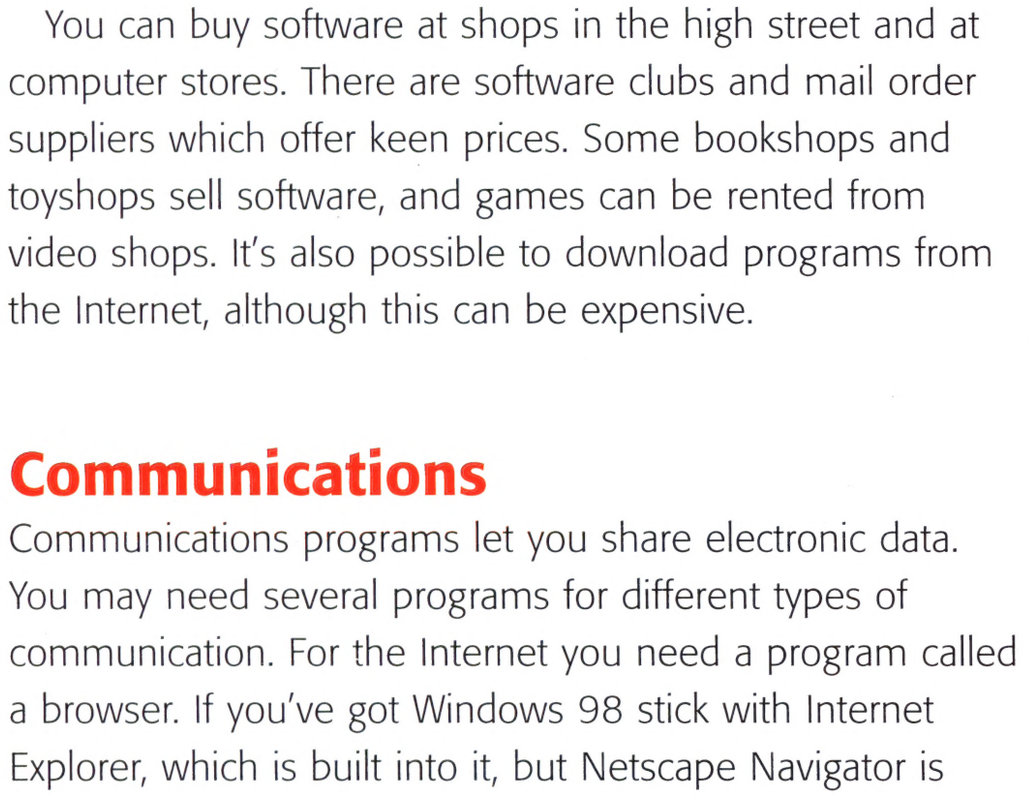
Programmers write instructions for PCs, telling them what to do. The instructions for handling a company's accounts or playing a virtual reality game are complex. There could be millions of them and they may have taken a team of programmers years to develop. Once programs have been tested they can be put on CD-ROM and loaded on any PC.

Few PC users are programmers, just as few people who use bridges are structural engineers. You don't have to be. All you need is a program that somebody else is willing to sell. The software industry is continually evolving as people think of new uses for PCs. And as the hardware gets better, programmers write more complex programs.

You can buy software at shops in the high street and at computer stores. There are software clubs and mail order suppliers which offer keen prices. Some bookshops and toyshops sell software, and games can be rented from video shops. It's also possible to download programs from the Internet, although this can be expensive.

Communications

Communications programs let you share electronic data. You may need several programs for different types of communication. For the Internet you need a program called a browser. If you've got Windows 98 stick with Internet Explorer, which is built into it, but Netscape Navigator is popular with users of other versions of Windows.

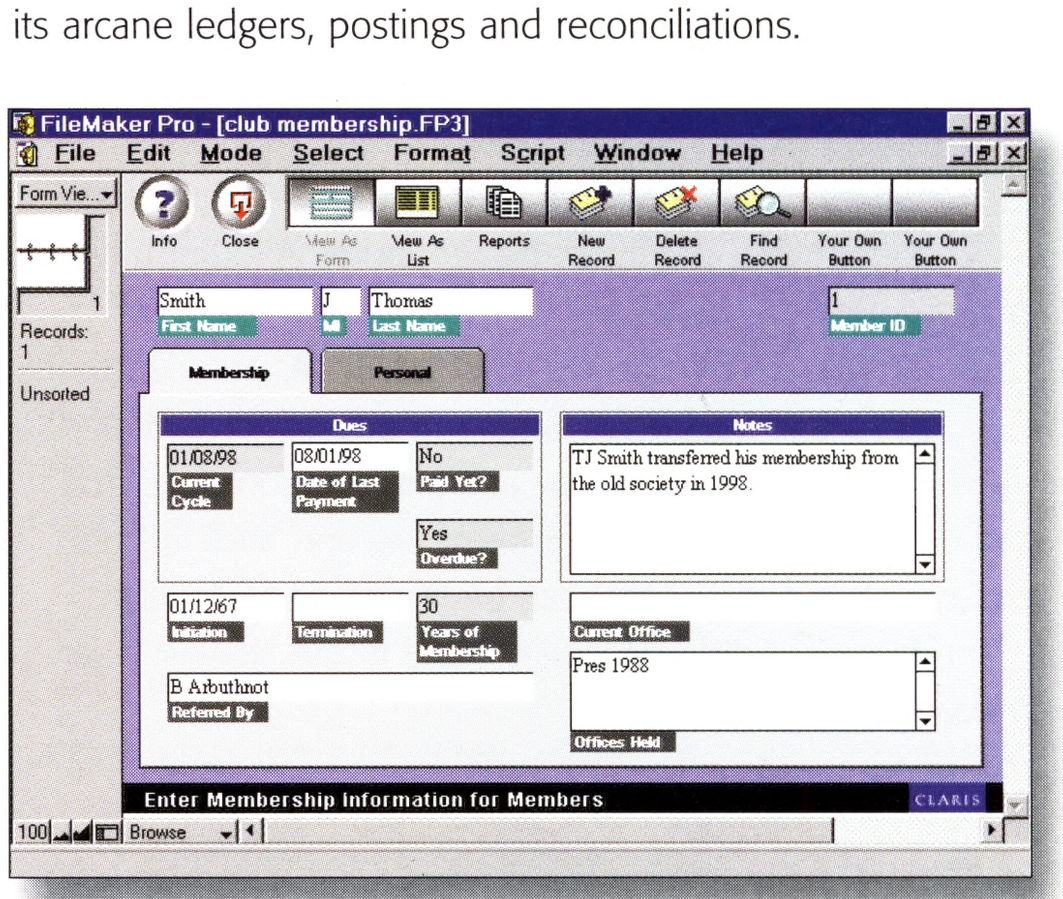


Microsoft Outlook is a personal information manager that also handles electronic messages in the form of emails and faxes.

Browsers include the software you need to join Internet newsgroups and to send and receive email, but rather than start up a browser to send email you might prefer to use a program specifically for this purpose. Personal information managers (PIMs) can also be used for email and faxing. If you want to exchange data between PCs you can buy software that provides a private link. You can even buy remote control software that lets you call up your PC from a distant PC and use it as if you were sitting in front of it.

Business tools

PCs were designed for business. Much business software has a rather limited appeal outside the workplace and few users have any need for a business accounts program with its arcane ledgers, postings and reconciliations.



A database is not the easiest of business programs to set up but the good ones come ready to do common tasks. A membership database is shown here.

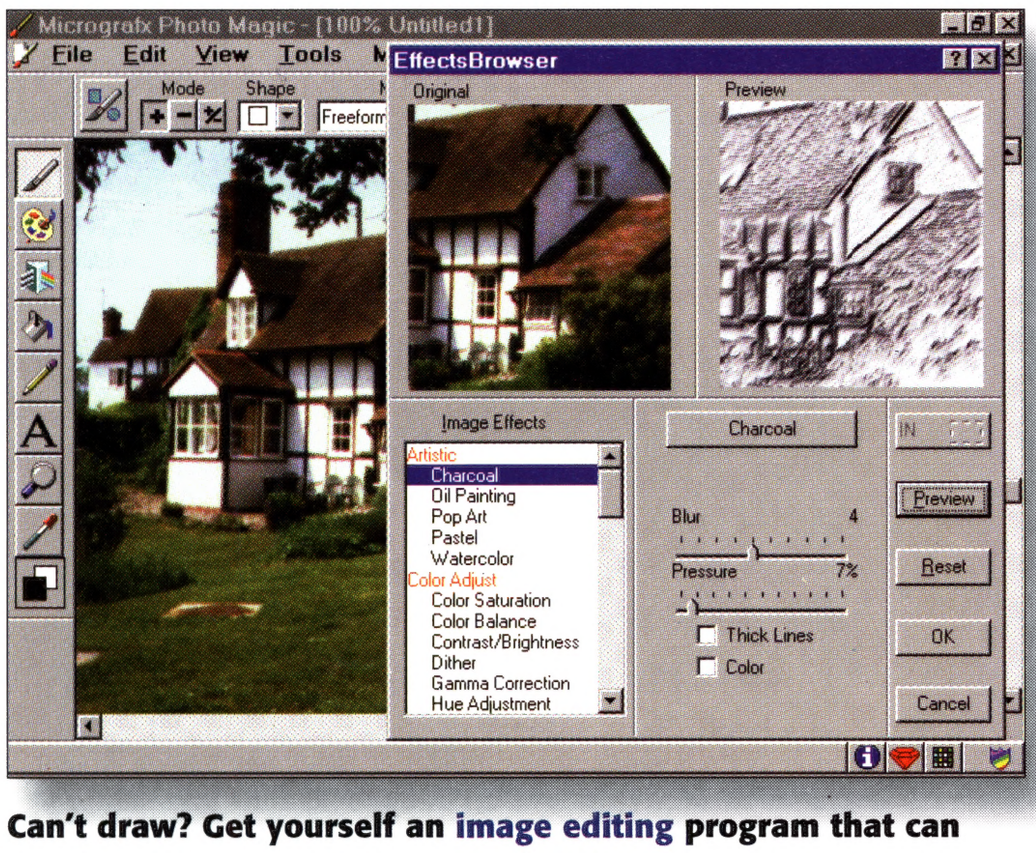
While great for running sophisticated booking, invoicing and stock control systems, databases too complex for storing recipes and Christmas card lists. Most people feel happier with a spreadsheet, which is popular way of storing lists, making calculations and producing charts.

Other business software has crossed into the general market. The word processor is top of the list. These can be used to write letters, reports, invitations, homework and any type of document combining words and pictures. They can even turn out publications such as books and magazines. Presentation packages are another category of business program that has non-commercial credentials. They can be used to enliven any talk or lecture and are popular with teachers, trainers and salespeople.

Electronic pictures

You can create computer graphics in the same way as you'd paint on canvas, by mixing colours and shapes. The difference is that you paint with your mouse and dots on the screen instead of with a brush. Paint programs are fun but hard to use well unless you've got artistic talent.

There's a different type of graphics program for drawing rather than painting. Drawings are made of geometric shapes and patterns. They can be enlarged and their quality doesn't suffer. Draw programs aren't as much fun as paint programs but they are more forgiving of mistakes.



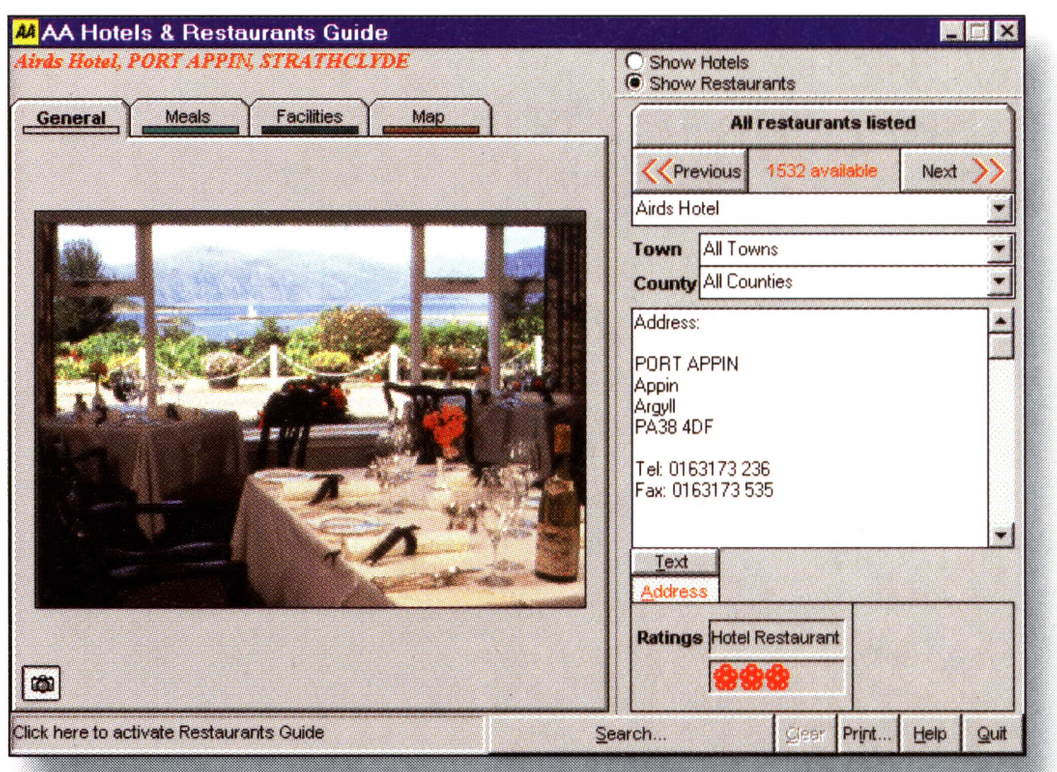
Can't draw? Get yourself an image editing program that can turn a holiday snap into a charcoal drawing in seconds.

A third type of graphics program is for image editing. An image is a photo that has been transferred to a PC. Images can be edited, re-sized and have special effects applied to them before being printed out or displayed on screen.

Infotainment

Infotainment combines information and entertainment. In life, people seem dedicated to keeping information and entertainment apart, but PC software proves that learning can be fun and games can be educational.

The range of software is vast: from programs designed to teach maths to kids, to encyclopaedias for adults. There are programs with an educational bias, such as those designed to help with National Curriculum topics and programs of general interest, like a tour of the human body. Hobbies are catered for, and even games can be educational. Of course, you can spend all your time zapping aliens, but some of the most popular games are simulations of running countries or businesses.

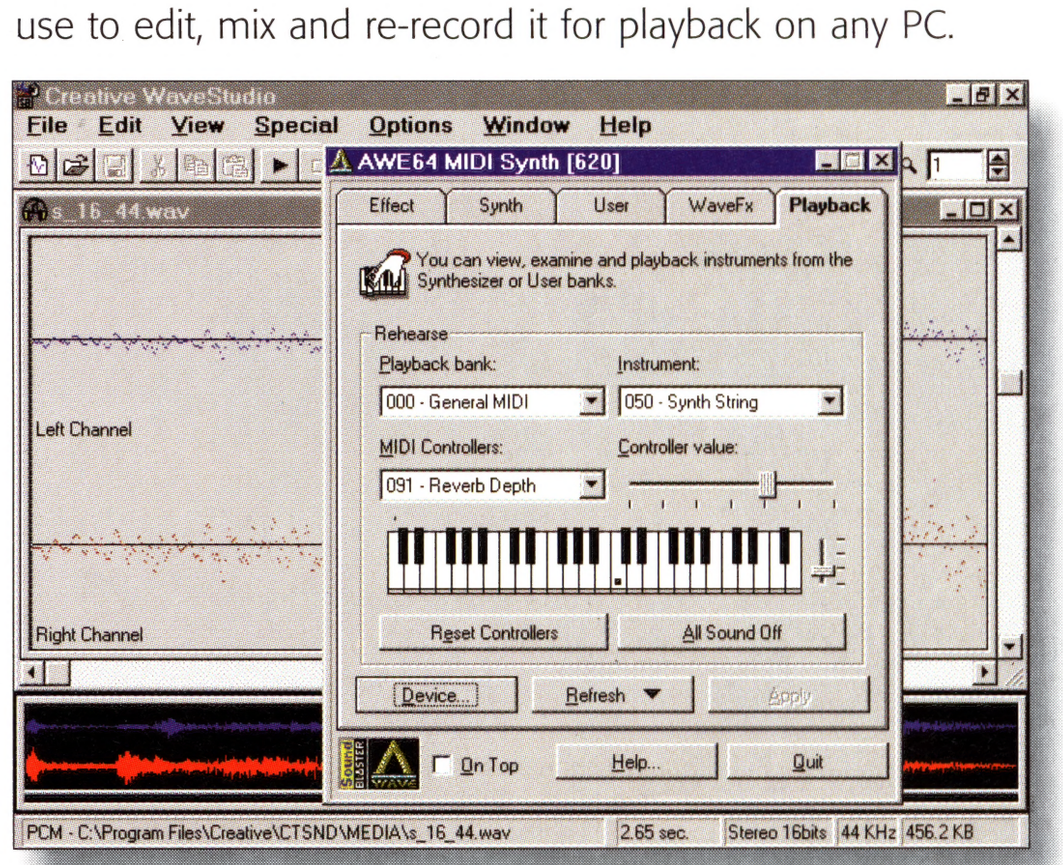


Choosing a spot for a romantic weekend break is easy when you can sample the view on an interactive guide.

Multimedia

Multimedia is a mix of words, sounds and pictures. Elements are created using separate pieces of software and combined using an authoring program whose function is to add interactive elements and bind them together. There are programs for creating music and sound effects. Animation software lets you create moving pictures by running a series of still drawings in sequence, using PC animation techniques to move characters in a more natural way.

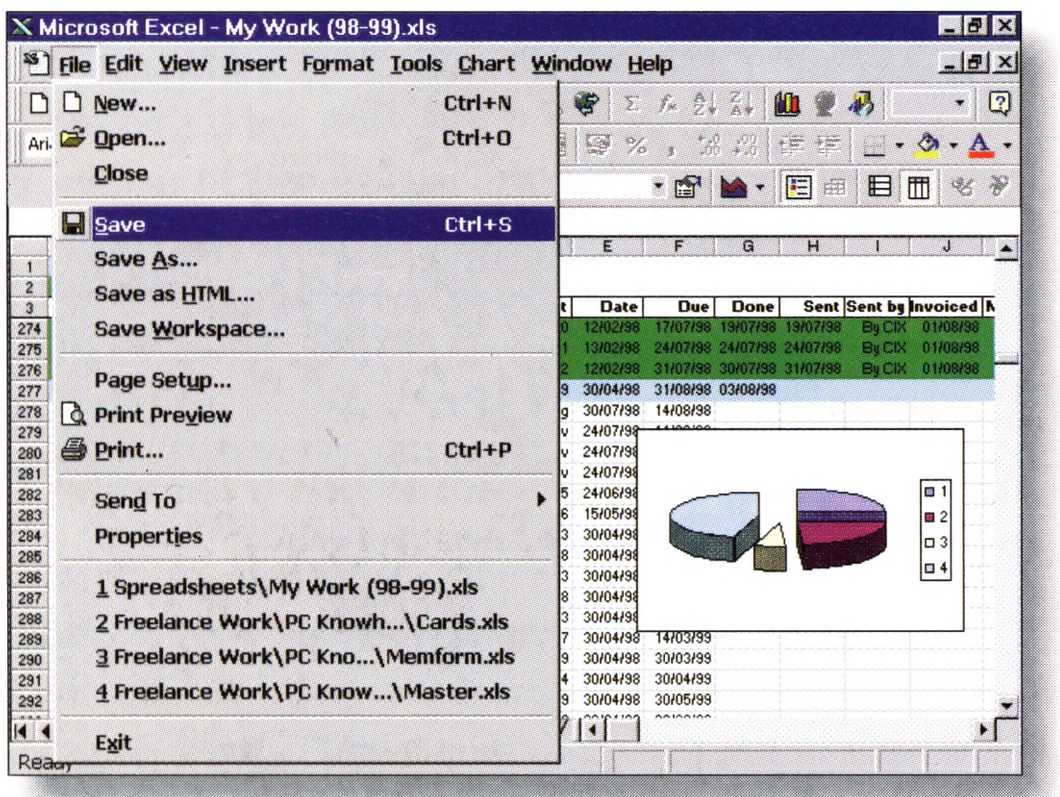
Digital video cameras can download pictures directly to a PC. Sequences from camcorders can be transferred with the help of video capture software and hardware. Once the digital video is stored on disk there are programs you can use to edit, mix and re-record it for playback on any PC.



You can create, cut and edit music using just the programs supplied with your PC, but for professional results you need professional multimedia software.

Windows

Windows is the software that allows all your other applications and hardware to work together.



Like all good Windows programs, the Excel spreadsheet has a Save command on its File menu.

The programs described on the previous pages have one thing in common: to do what they are designed to do, they have to work with the hardware in a PC and the devices plugged into it. Programs have to respond to instructions from the mouse and keyboard; they have to be able to generate pictures on any monitor; and they have to be able to produce text and pictures on different types of printer.

Hidden depths

Some years ago, Microsoft came up with a program that simplified these activities. It's called Windows, and its job is to provide background services for all other programs. It understands how a PC's monitor, mouse, keyboard and printer work, so that the other programs don't have to.

There's a parallel with how big companies work. Whatever a firm's main activity is, it needs administrative and office services to do the mundane tasks like running the switchboard and providing cleaning, maintenance and security. Windows performs the same services for PCs.

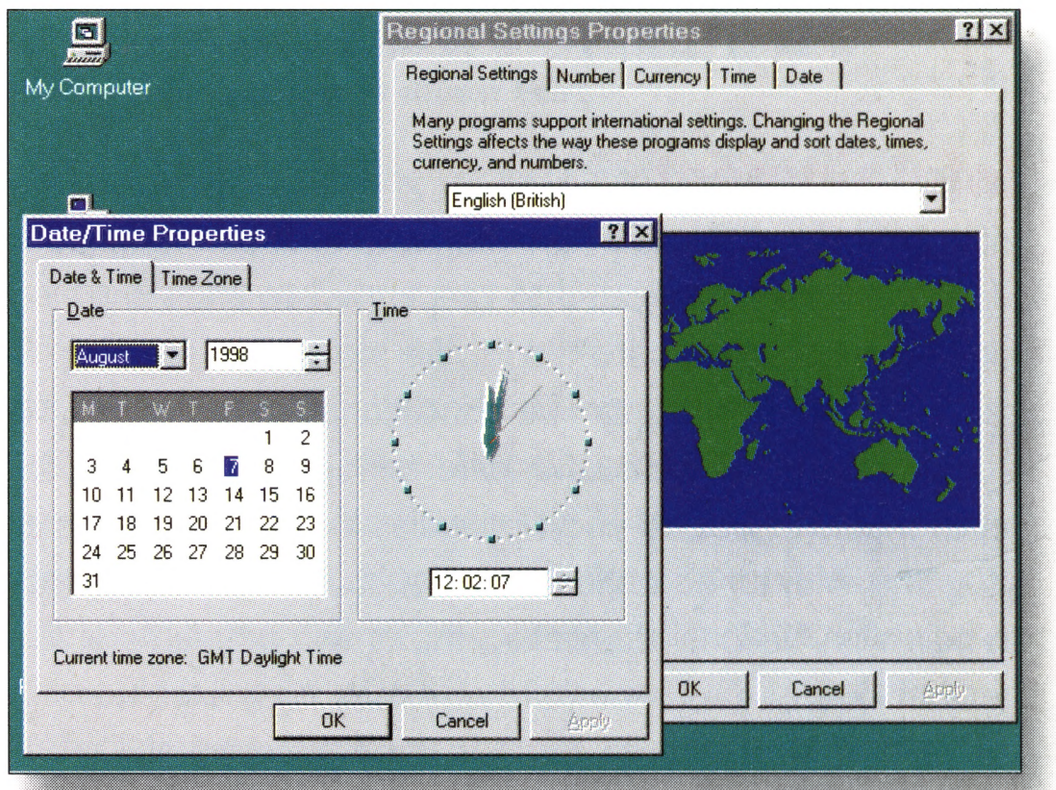
The technical name for a computer's supporting software is its operating system. Windows is not the only operating system for PCs, but it's the one that everybody uses. You'd need a very convincing reason to opt for an alternative. The reason is that when you buy a piece of software, it doesn't matter whether it's a business tool or a game, it's written for a particular combination of computer and operating system. The majority of programs are written exclusively for Windows, so if you don't use Windows you limit the range of programs you can use.

The popularity of Windows is self-perpetuating. Because it's so popular, software designers write programs for it, which increases the range of programs for Windows and makes it more popular. Microsoft continues to develop and improve Windows despite its virtual monopoly. The current version is Windows 98. The previous version was Windows 95, which was released three years earlier. There's not a lot to choose between them. The later version is smoother and incorporates three years' worth of improvements.

A history lesson

Before 1995 there were several versions of Windows that were not identified by their year of release. Some are still in use on older PCs, but the bulk of new software is designed for Windows 95 and 98. These are the versions of Windows installed on new PCs.

Windows leads to consistency. Take printing as an example: to print your work you use the Windows Print command, which is always in a program's File menu. The File menu is always in the same place on screen, so once you can print from one Windows program you can print from them all. The same goes for creating new work, saving old work and getting help. Before Windows there was no conformity between programs and every time you bought a new one it had to be learnt from scratch.



The Date/Time Properties box is typical of the point-and-click approach of Windows. Dates and times are displayed as screen clocks and calendars that look just like the real thing.